

What is claimed is:

1) A process for producing a polyurethane foam comprising the steps of:

- a) providing an organic polyol having a molecular weight in the range of 2000 to 5 7000, wherein said polyol has a level of unsaturation of between 0.001 and 0.030 meq./gram;
- b) providing an organic isocyanate;
- c) providing a blowing agent;
- d) providing a reactive catalyst;
- 10 e) mixing said polyol, said isocyanate, and said blowing agent in the presence of said catalyst,

so as to produce a polyurethane foam.

2) A process according to claim 1 wherein said reactive catalyst comprises one or more

15 catalysts selected from the group consisting of: (2-(2-(2-dimethylaminoethoxy-)ethyl methyl amino-)ethanol); (bis-(3-dimethylaminopropyl)-imino-propan-2-ol); (2-propanol, (1,1'-(3-(dimethylamino)propyl)imino)bis- ; and (tetramethyliminobispropylamine).

3) A process according to claim 1 wherein said isocyanate is an organic di-isocyanate.

4) A process according to claim 3 wherein said organic di-isocyanate is selected from the group consisting of: toluene diisocyanate, diphenylmethane-4,4'-diisocyanate, polymerized isocyanates; aliphatic polyisocyanates; alicyclic polyisocyanates; pre-polymers with end isocyanate groups such as toluenediisocyanate pre-polymer and  
5 diphenylmethane-4,4'-diisocyanate pre-polymer which are obtained by the reaction of the above-mentioned substances with a polyol; denatured isocyanate such as carbodiimide denatured substances; and further mixed polyisocyanates thereof. Thus, the words "organic isocyanate" as used herein includes any and all of the aforesaid isocyanates, including mixtures thereof.

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5) A process according to claim 1 wherein said blowing agent is selected from the group consisting of: butane, pentane, halogenated hydrocarbons, carbon dioxide, acetone, and water.

15 6) A process according to claim 5 wherein said blowing agent comprises a halogenated hydrocarbon present in any amount between 2.0 and 30 percent by weight of the total polyol used in making said polyurethane foam.

20 7) A polyurethane foam which contains a level of unsaturation of between 0.001 and 0.030 milliequivalents for every gram of polyol used in its manufacture.

8) A polyurethane foam which contains a level of unsaturation of between 0.005 and 0.025 milliequivalents for every gram of polyol used in its manufacture.

9) A polyurethane foam which contains a level of unsaturation of between 0.010 and 0.020 milliequivalents for every gram of polyol used in its manufacture.

10) A polyurethane foam produced by a process comprising the steps of:

- 5        a) providing an organic polyol having a molecular weight in the range of 2000 to 7000, wherein said polyol has a level of unsaturation of between 0.001 and 0.030 meq./gram;
- 10      b) providing an organic isocyanate;
- c) providing a blowing agent;
- d) providing a reactive catalyst;
- e) mixing said polyol, said isocyanate, and said blowing agent in the presence of said catalyst,

so as to produce a polyurethane foam.

15     11) A process according to claim 10 wherein said reactive catalyst comprises one or more catalysts selected from the group consisting of: (2-(2-(2-dimethylaminoethoxy)-ethyl methyl amino-)ethanol); (bis-(3-dimethylaminopropyl)-imino-propan-2-ol); (2-propanol, (1,1'-(3-(dimethylamino)propyl)imino)bis- ; and (tetramethyliminobispropylamine).

20     12) A process according to claim 10 wherein said isocyanate is an organic di-isocyanate.

13) A process according to claim 12 wherein said organic di-isocyanate is selected from the group consisting of: toluene diisocyanate, diphenylmethane-4,4'-diisocyanate, polymerized isocyanates; aliphatic polyisocyanates; alicyclic polyisocyanates; pre-polymers with end isocyanate groups such as toluenediisocyanate pre-polymer and 5 diphenylmethane-4,4'-diisocyanate pre-polymer which are obtained by the reaction of the above-mentioned substances with a polyol; denatured isocyanate such as carbodiimide denatured substances; and further mixed polyisocyanates thereof. Thus, the words "organic isocyanate" as used herein includes any and all of the aforesaid isocyanates, including mixtures thereof.

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14) A process according to claim 10 wherein said blowing agent is selected from the group consisting of: butane, pentane, halogenated hydrocarbons, carbon dioxide, acetone, and water.

15 15) A process according to claim 14 wherein said blowing agent comprises a halogenated hydrocarbon present in any amount between 2.0 and 30 percent by weight of the total polyol used in making said polyurethane foam.

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